

AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Currently Amended) A screw mechanism having a member to be tightened ~~[[3]]~~ being tightened and fixed by screwing ~~[[one]]~~ a screw member on a tightening side ~~[[1]]~~ to another screw member ~~[[2]]~~ ~~characterized by making~~ , comprising:

structures having a pair of inclined surfaces ~~[[6]]~~ interpose between the screw member on the tightening side ~~[[1]]~~ and the member to be tightened ~~[[3]]~~ in a mutually contacted state, and

said inclined surfaces ~~[[6, 6]]~~ circling around substantially once in spiral form with a lead smaller than a lead of the screw, both ends thereof ~~being connected with~~ having a tier face ~~[[7]]~~ in the axial direction and a flat recessed surface in the radial direction interposed therebetween.

2. (Currently Amended) The screw mechanism according to claim 1, wherein said inclined surfaces ~~[[6, 6]]~~ are formed on mutually contacting surfaces of a pair of washers ~~[[4a, 4b]]~~ interposed between the screw member on the tightening side ~~[[1]]~~ and the member to be tightened ~~[[3]]~~.

3. (Currently Amended) The screw mechanism according to claim 1, wherein one [(6)] of said pair of inclined surfaces [(6, 6)] is formed on a surface of [[a]] said screw member on the tightening side [(12)] on the member to be tightened side, and the other [(6)] is formed on [[said]] a washer [(4b)] interposed between the screw member on the tightening side [(1)] and the member to be tightened [(3)].

4. (Currently Amended) The screw mechanism according to claim 2 or claim 3, wherein an outer circumference of said washer [(4)] is made roughly a same shape as a mating portion, of said screw member to be tightened side, having a different diameter and for transferring a tightening torque applied on an outside circumference of the screw member on the tightening side [(1)].

5. (Currently Amended) The screw mechanism according to claim 2 ~~or claim 3~~ 4, wherein said mating portion ~~having a different diameter of said washer (4) or the screw member on the tightening side (1, 12) having said inclined surface (6) formed~~, is composed of polygon faces; and

a plurality of codes or symbols [(10)] with regularly increasing values are sequentially appended to sequentially adjacent side faces next to a face

corresponding to a forming position of said tier face, in one direction of an inclination direction of said inclined surface.

6. (Currently Amended) ~~[[The]]~~ A screw mechanism according to claim 2,
~~wherein~~ having a member to be tightened being tightened and fixed by screwing
screw member on a tightening side to a second screw member, comprising:

structures having a pair of inclined surfaces interpose between the screw
member on the tightening side and the member to be tightened in a mutually
contacted state;

said inclined surfaces circling around substantially once in spiral form with
a lead smaller than a lead of the screw, both ends thereof having a tier face in the
axial direction interposed therebetween;

said inclined surfaces being formed on mutually contacting surfaces of a
pair of washers interposed between the screw member on the tightening side and
the member to be tightened; and

a pre-fixing means for pre-fixing both of the pair of washers ~~(14a, 14b)~~ a
~~re-pre-fixed~~ to break away with a rotating torque of a tightening in a state of
making said inclined surfaces ~~[[(6)]]~~ of said pair of washers ~~[[(14a, 14b)]]~~ coming
into contact with each other, and said pair of tier faces ~~[[(7, 7)]]~~ being spaced with
a prescribed interval.

7. (Currently Amended) ~~[[The]]~~ A screw mechanism according to claim 2,
~~wherein~~ having a member to be tightened being tightened and fixed by screwing
screw member on a tightening side to a second screw member, comprising:

structures having a pair of inclined surfaces interpose between the screw
member on the tightening side and the member to be tightened in a mutually
contacted state;

said inclined surfaces circling around substantially once in spiral form with
a lead smaller than a lead of the screw, both ends thereof having a tier face in the
axial direction interposed therebetween;

said inclined surfaces being formed on mutually contacting surfaces of a
pair of washers interposed between the screw member on the tightening side and
the member to be tightened; and

a graduation ~~[[16]]~~ ~~[[is]]~~ being formed on the outer circumference of said
washer ~~[[14]]~~ along one direction in the inclination direction from the formed
position of said tier face ~~[[7]]~~.

8. (Currently Amended) The screw mechanism according to claim 6,
wherein said pre-fixing means is composed of an adhesive tape ~~[[17]]~~ pasted on
the outer circumference of said washers ~~[[14a, 14b]]~~, and an achievable tightening
axial force is indicated on an outer face of said pre-fixing means.

9. (Currently Amended) The screw mechanism according to claim 6, wherein said pre-fixing means is composed of an adhesive tape [(17)] pasted on the outer circumference of said washers [(14a, 14b)], and a plurality of tear-off-cuts [(17a)] are provided intermittently on a circumference direction on said adhesive tape [(17)] in a vicinity of a contacting face of both of said washers [(14a, 14b)].

10. (Currently Amended) The screw mechanism according to any one of the claims 6 to 9, wherein both of said washers [(14a, 14b)] are pre-fixed with grease applied between said inclined surfaces [(6, 6)].

11. (Currently Amended) A double nut ~~characterized by~~ for fastening on a screw, comprising:

a pair of nut members each having ~~forming~~ an inclined surface [(6)] on pressure-contacting surfaces of [[a]] said pair of nut members [(18, 18)], wherein said inclined surface circles around substantially once in spiral form with a lead smaller than a lead of [[a]] the screw, and both ends thereof ~~are connected with~~ having a tier face [(7)] in the axial direction and a flat recessed surface in the radial direction interposed therebetween; and

said nut members having female screws processed on both of said nut members ~~[[(18),]]~~; and

said nut members being disposed in a state with both of said inclined surfaces ~~[[(6)]]~~ brought into contact with each other, and an interval in the rotating direction being provided between said tier faces ~~[[(7)]]~~.

12. (Cancelled)

13. (Currently Amended) The tightening method of a screw mechanism according to claim ~~[[12]]~~ 14, wherein a tightening axial force generated by said initial-tightening is made to be one-tenth or less of a tightening axial force on completion of the tightening.

14. (Currently Amended) ~~[[The]]~~ A tightening method of a screw mechanism ~~according to claim 12 or claim 13, wherein said tightening method comprising the steps of:~~ for tightening and fixing a member to be tightened by screwing one screw member on the tightening side to another screw member, said method comprising the steps of:

interposing a pair of inclined surfaces ~~[[(6, 6)]]~~ between the screw member on the tightening side ~~[[(1)]]~~ and the member to be tightened ~~[[(3)]]~~ in a mutually

contacted state, wherein said inclined surfaces circle around substantially once in spiral form with a lead smaller than a lead of the screw, and both ends thereof ~~are connected with~~ having a tier face [(7)] in the axial direction and a flat recessed surface in the radial direction interposed therebetween;

initial-tightening of the screw member on the tightening side with an initial rotating torque, including conducting the initial-tightening in a state with an interval of a preset angle maintained between said tier faces [(7, 7)] of said pair of inclined surfaces [(6, 6)]; [[and]]

tightening and rotating the screw member on the tightening side for a preset angle by tightening and rotating the screw member on the tightening side [(1)] until the tier faces [(7, 7)] come into contact with each other, after said initial-tightening.

15. (Currently Amended) A screw mechanism ~~characterized by~~ comprising:

a first inclined surface [(31)] provided on one screw member [(21)] of either a male screw member [(21)] or a female screw member [(22)], or on a member [(24)] integrally rotating with said one screw member relative to another member, wherein said first inclined surface [(31)] circles around substantially once in spiral form, and both ends of said inclined surface [(31)] ~~are connected with~~ having sequentially a first plane surface in a radial direction, a tier face

[[32]] in an axial direction and a second plane surface in the radial direction interposed therebetween;

a second inclined surface [[31]] provided on another screw member [[22]] of either the male screw member [[21]] or the female screw member [[22]], or on a member [[25]] integrally rotating with said screw member [[22]], wherein said second inclined surface [[31]] face-contacts with said first inclined surface [[21]], said second inclined surface extending substantially once around a circle in a spiral form and [[both]] ends of said second inclined surface [[31]] have sequentially a first plane surface extending in the radial direction, a tier face extended in the axial direction and a second plane surface extended in the radial direction interposed therebetween ~~are similarly connected with a tier face (32) in the axial direction; and~~

~~recess-concave portions (33, 34) provided on an end portion next to said tier face (32) of said inclined surface (31); and wherein~~

a spiral lead of both of said inclined surfaces [[31, 31']] [[are]] being configured to be bigger than a screw lead of both of the screw members [[21, 22]].

16. (Currently Amended) The screw mechanism according to claim 15, wherein stoppers [[43, 44]] maintaining a reverse-lock state by mutually mating

are installed in protrusion on said first and second plane surfaces ~~recess-concave-
portions (33, 34) of said inclined surface (31)~~, wherein said reverse-lock is conducted by rotating in an opposite direction of ~~[[an]]~~ a tightening direction and locking after tightening and fixing the male screw member ~~[[21]]~~ and the female screw member ~~[[22]]~~.

17. (Currently Amended) The screw mechanism according to claim 15 or claim 16, wherein:

a member ~~[[24, 25]]~~ integrated in a rotating direction with the male screw member ~~[[21]]~~ or the female screw member ~~[[22]]~~ is constituted by a washer ~~[[24, 25]]~~, ~~wherein and~~

said washer has non-slip-means ~~[[29]]~~ provided on a seat portion ~~[[27]]~~ on one end side, and has said inclined surface ~~[[31]]~~, said tier face ~~[[32]]~~, and said first and second plane surfaces ~~recess-concave-
portions~~ ~~[[33, 34]]~~ formed on an end face of a cylinder portion ~~[[28]]~~ on another end side thereof.

18. (Currently Amended) A screw mechanism ~~characterized in~~ comprising:

a first inclined surface ~~[[31]]~~ provided on one screw member ~~[[42]]~~ of either a male screw member ~~[[41]]~~ or a female screw member ~~[[42]]~~, or on a member integrally rotating with said one screw member relative to another

member, wherein said first inclined surface circles around substantially once in spiral form, and ~~[[both]]~~ ends of said inclined surface ~~are connected with~~ have sequentially a first plane surface extending radially, a tier face ~~[[32]]~~ extending in the axial direction , and a second plane surface extending radially interposed therebetween; and

a washer ~~[[26]]~~ having a second inclined surface ~~[[31]]~~ face-contacting with said first inclined surface ~~[[31]]~~, ~~[[both]]~~ said second inclined surface extending in a spiral substantially one turn, and ends of said second inclined surface ~~being similarly connected with~~ having sequentially a first plane surface extending radially, a tier face ~~[[32]]~~ extending in the axial direction, and a second plane surface extending radially interposed therebetween, and non-slip-means ~~[[29]]~~ on a seating-face on the opposite side of said inclined surface ~~[[31]]~~, wherein

a spiral lead of both of said inclined surfaces ~~[[31]]~~ is configured to be bigger than the screw lead of both of the screw members ~~[[41, 42]]~~, and

a member to be tightened ~~[[45]]~~ with low anti-crack characteristics against pressure, such as glass, ceramic, or plastic, is tightened and fixed between a member ~~[[40]]~~ integrated in the rotating direction with the other screw member ~~[[41]]~~ of either the male screw member ~~[[41]]~~ or the female screw member ~~[[42]]~~, and the washer ~~[[26]]~~.

19. (Currently Amended) A screw mechanism having a member to be tightened ~~[[23]]~~ tightened and fixed by screwing one screw member ~~[[22]]~~ to ~~[[the]]~~ an other screw member ~~[[21]]~~, wherein said screw mechanism is ~~characterized by arranging to be provided~~ between opposing surfaces of a screw member on the tightening side ~~[[21]]~~ and a member to be tightened ~~[[23]]~~, said screw mechanism comprising:

a first washer ~~[[24]]~~ having an inclined surface ~~[[31]]~~ circling around substantially once in spiral form, ~~[[both]]~~ ends of said inclined surface ~~being connected with~~ having sequentially a first plane surface extending radially, a tier face ~~[[32]]~~ in an axial direction, and a second plane surface extending radially interposed therebetween; and

a second washer ~~[[25]]~~ having an inclined surface ~~[[31]]~~ face-contacting with said inclined surface ~~[[31]]~~ of said first washer ~~[[24]]~~, ~~both~~ ends of said inclined surface ~~being similarly connected with a tier face ~~[[32]]~~ in an axial direction~~ having sequentially a first plane surface extending radially, a tier face in an axial direction, and a second plane surface extending radially interposed therebetween, wherein

spiral leads of said inclined surfaces ~~[[31]]~~ of both of said washers ~~[[24, 25]]~~ are configured to be bigger than a screw lead of said screw members ~~[[21, 22]]~~, and

a friction force between the screw member on the tightening side [(21)] and said first washer [(24)] is constituted to be bigger than a friction force between said inclined surfaces [(31, 31)] of both of said washers [(24, 25)], and smaller than a friction force between said second washer [(25)] and the member to be tightened [(23)], before and after the completion of the tightening.

20. (Currently Amended) The screw mechanism according to claim 19, wherein

a spiral lead angle of said inclined surface [(31)] is made to be two times or less the lead angle of the screw.

21. (Currently Amended) The screw mechanism according to claim 19, wherein

the friction force between the screw member on the tightening side [(21)] and said first washer [(24)] is constituted to be two to four times the friction force between said inclined surfaces [(31)] of both of said washers [(24, 25)].

22. (Currently Amended) The screw mechanism according to claim 19, wherein

a non-slip-protrusion-group [(49)] is provided on seating-surfaces contacting with each of opposing surfaces of the screw member on the tightening side [(21, 42)] and the member to be tightened [(23)] of said first and second washer [(24, 25)], and

a hardness of the opposing surface of the screw member on the tightening side [(21, 42)] is made to be lower than the hardness of said non-slip-protrusion-group [(49)], and the hardness of the opposing surface of the member to be tightened [(23)] is made to be lower than the hardness of the opposing surface of the screw member on the tightening side [(21, 42)].

23. (Currently Amended) The screw mechanism according to claim 19, wherein

said non-slip-protrusion-group [(49)] is provided on the seating-surfaces contacting with each of the opposing surfaces of the screw member on the tightening side [(21, 42)] and the member to be tightened [(23)] of said first and second washer [(24, 25)], and

a non-slip-protrusion-group [(47)] of a different pitch is provided on the opposing surface of the screw member on the tightening side [(21, 42)].

24. (Currently Amended) The screw mechanism according to claim 22 or claim 23, wherein

said non-slip-protrusion-groups [(47, 49)] are constituted by a plurality of streaks of non-slip-protrusion-bands [(48, 50)] in annular or radius direction, and arranged and installed with an appropriate interval [(48a, 50a)].

25. (Currently Amended) The screw mechanism according to claim 23, wherein

a friction-force-adjusting-sheet is interposed between the opposing surface of the screw member on the tightening side [(21, 42)] and the seating-surface of said first washer [(24)].

26. (Currently Amended) The screw mechanism according to claim 25, wherein

said friction-force-adjusting-sheet is composed of a cloth or a paper containing abrasive-grains.

27. (Currently Amended) ~~[[The]]~~ A screw mechanism according to claim 19, wherein having a member to be tightened tightened and fixed by screwing one screw member to an other screw member, wherein said screw mechanism is to be

provided between opposing surfaces of a screw member on the tightening side and a member to be tightened, said screw mechanism comprising:

a first washer having an inclined surface circling around substantially once in spiral form, ends of said inclined surface having a tier face in an axial direction interposed therebetween; and

a second washer having an inclined surface face-contacting with said inclined surface of said first washer, ends of said inclined surface having a tier face in an axial direction interposed therebetween, wherein

spiral leads of said inclined surfaces of both of said washers are configured to be bigger than a screw lead of said screw members,

a friction force between the screw member on the tightening side and said first washer is constituted to be bigger than a friction force between said inclined surfaces of both of said washers, and smaller than a friction force between said second washer and the member to be tightened, before and after the completion of the tightening;

a latching-ring (36) is provided, said latching-ring (36) has having a planar and C-lettered form, and can be fitted fittable onto an outer circumference of said first and second washers [(24, 25)] elastically,

a tongue piece [(37)] [[is]] installed in protrusion in an inner circumference of said latching-ring 36, fitting into a clearance [(38)] generated

between said tier faces [(32, 32)] of said first and second washers [(24, 25)], in a state of reverse-lock having been conducted, where said reverse-lock locks by rotating in an opposite direction of the tightening direction, after tightening the screw member on the tightening side [(21, 42)].

28. (New) The screw mechanism according to any one of claims 6 through 9, wherein, for each of the inclined surfaces a flat recessed surface is interposed between one end of the spiral form and a second end of the spiral form which is terminated in the tier face.

29. (New) The screw mechanism according to any one of claims 6 through 10, wherein, for each of the inclined surfaces a flat recessed surface is interposed between one end of the spiral form and a second end of the spiral form which is terminated in the tier face.

30. (New) The screw mechanism according to claim 27 wherein said inclined surfaces each have having sequentially a first plane surface extending radially, the tier face in an axial direction, and a second plane surface extending radially interposed between the ends thereof.